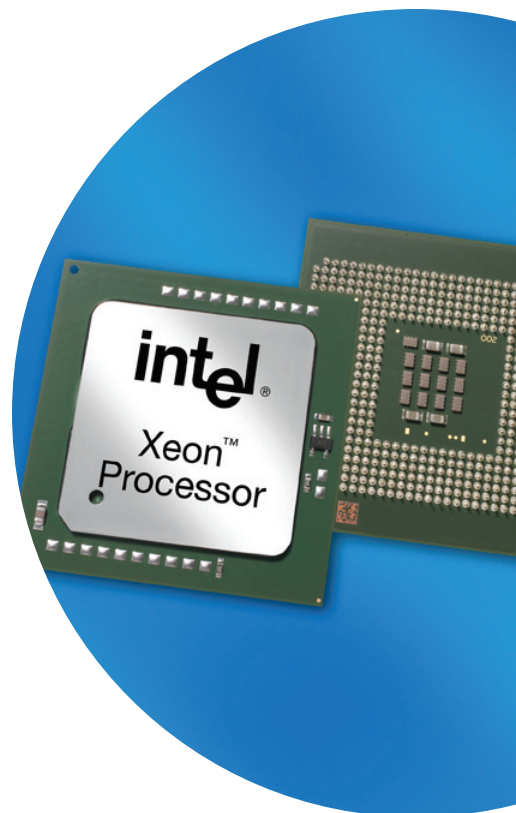




## Enhance the power of your platform.

Intel® Xeon™ processors deliver performance, reliability, and room to grow for enterprise platforms.

[www.intel.com/xeon](http://www.intel.com/xeon)



# Versatility Delivers Value for Enterprise Platforms

Enterprise computing covers a wide range of applications, environments, and price points. From graphics workstations to enterprise servers, from small business and budgets to large, you need the ability to create platforms that meet your customers' enterprise computing needs, while controlling your own design, integration and support costs. Now the Intel® Xeon™ processor family offers power, versatility and value to help meet a whole spectrum of enterprise platform needs.

## New Intel® Xeon™ Processors Fit Enterprise Computing Needs

The Intel Xeon processor family provides the processing power and versatility required for workstations, front-end servers and small-business (SMB) servers as well as for High-Performance Computing (HPC). The latest Intel Xeon processors significantly improve your platforms' compute power and responsiveness. The latest Intel Xeon processors deliver enhanced platform performance and dependability through:

- Multiple processor operating frequency offerings ranging from 3.60 GHz to 2.80 GHz
- Fast system responsiveness with 800 MHz system bus
- Increased I/O performance and reduced latency via PCI Express\*<sup>1</sup> serial I/O technology, with up to 2x increase in graphics bandwidth compared to AGP 8X
- Power savings and increased system density for server applications with Demand Based Switching (DBS) based on Enhanced Intel SpeedStep® Technology
- Intel® Extended Memory 64 Technology<sup>2</sup> (Intel® EM64T) provides application flexibility with support for 64-bit memory addressability
- Economical, intelligent data protection solutions based on the Intel® IOP332 I/O processor

## Target Applications or Usages

Intel Xeon processor based servers offer compelling value for applications such as Web caching, multi-user applications, SMB servers, HPC servers, and more.

Server Type	Application Category	Application Software Examples
Front-end servers, Internet infrastructure	Cache/Web	Microsoft ISS*, Apache
	Directory	Microsoft Active Directory*
	Security infrastructure	RSA BSAFE*/SSL-C*, Symantec Norton AV*/ Enterprise Firewall*, Microsoft Crypto Library*, Network Associates*, McAfee*, Verisign PKI*
	Messaging (small business and departmental)	Lotus, Microsoft Exchange*
Application servers	e-Commerce, e-Business, Customer Relationship Management (CRM)	Adobe Altercast*, Ariba Buyer*, CA CleyerPath*, Interwoven TeamSite*, Microsoft Commerce Server*, Pivotal, Reuters Plus*, SunGard AddVantage*
	Collaboration	PTC Windchill*, UGS Teamcenter*, Microsoft Exchange Server*
Enterprise management	System management, Storage management	Veritas ServPoint*, BMC Patrol*
Databases	Database (small-business and departmental data)	Microsoft SQL Server*
High-Performance Computing		OSCAR*, SCYLD*, SCore*

## Scaling of Intel® Xeon™ Processor 3.60 GHz with 800 MHz System Bus for DP Workstations<sup>2</sup>



Source: Intel internal measurements (5/28/04).

Figure 1 Relative performance improvement compared to Intel Xeon 3.20 GHz with 1M cache

- Intel® Xeon™ processor with 533 MHz system bus-based workstation at 3.20 GHz with 1MB Additional Cache  
Dell® Precision® 650, 4GB DDR-266 –1GB Samsung M312L2920BG0-CCC, Adaptec 29320 SCSI adapter, Intel Chipset Software Utility INF version 5.00.1012, nVidia® Quadro® 4 Pro 980XGL 128MB AGP 8x video card using driver 52.14.
- Intel® Xeon™ processor with 800 MHz system bus-based workstation at 3.60 GHz with 1MB cache  
Intel® WS400 pre-release reference board, 4GB DDR2-400 -512MB Samsung M393T6553BG0-CCC, Adaptec AIC7902 Ultra320 SCSI adapter, Intel Chipset Software Utility INF version 5.20.1006, nVidia® Quadro® FX 1300 128MB PCIe video card using driver 60.30.

### System Configurations

All platforms: Microsoft Windows® XP Professional SP1, 36GB SCSI Seagate ST336753LW 15K hard drive

### NOTES:

1. All benchmarks measured on dual processor platform
2. SPECint2000 and SPECfp2000 benchmark tests reflect the performance of the microprocessor, memory architecture and compiler of a computer system on compute-intensive, 32-bit applications. SPEC benchmark tests results for Intel microprocessors are determined using particular, well-configured systems. These results may or may not reflect the relative performance of Intel microprocessors in systems with different hardware or software designs or configurations (including compilers). Buyers should consult other sources of information, including system benchmarks, to evaluate the performance of systems they are considering purchasing.

Workstations based on dual Intel Xeon processors deliver excellent scalability and performance for heavy multitasking and multi-threaded applications.

Application Category	Application Software Examples
ASIC design	Design Compiler*, Calibre*, Verilog-XL*, VCS*, ModelSim*, SeedSim*, QuickSim*, TeraForm*, IC Station*, Seamless*, Celaro*, LeonardoSpectrum*
Compositing/Effects	Avid*/Softimage*, Discreet*, EYEsOn Software*, Adobe*, Nothing Real*
Custom IC CAD design	Si/Gate Ensemble*, Dracula*, Hercules*, Blast*, Grandmaster*, Dolphin*, EPIC Tools*
Digital content creation	Toxik*, 3D Studio Max*, Renderman*, Socratto*, Lightwave*, Maya*
FPGA and PLD creation	Accel*, Design Book*, Altera Quartus*, Protel*, Summit*, Minc*, FPGA Express*
Life sciences	CHARMm*, Blast*, d2_Cluster*, DGauss*
Mechanical CAD	Pro/Engineer*, Parasolid*, Unigraphics*
Mechanical CAE	Pam Crash*, Abaqus*, LS-Dyna*, Nastran*, Permas*, Multiphysics*
Non-linear video editing	Avid*, Discreet*, Adobe*, NewTek*
Printed circuit board design	Boardstation*, Allegro* (Spectra), Interconnect Synthesis*, Viewlogic*, P-Cad*, OrCad*, Veribest*
3D modeling/animation	Alias/Wavefront*, Avid*/Softimage*, 3D Studio Max*, NewTek*
3D network rendering	Mental Images*, Pixar*, Blue Moon*, Play-Electric Image*

## Intel® Xeon™ Processor Family Overview

Dual-processor (DP) servers based on Intel® Xeon™ processors help deliver performance, reliability, versatility, and low ownership costs and more, at a variety of price-points. With the new generation of processors built on 90-nanometer technology, platforms can deliver higher clock speed, greater functionality, and enhanced features over previous generation platforms. Figure 1 illustrates the performance advantages of the new Intel Xeon processor with 800 MHz system bus.

## Platform Solutions

The following chipsets are optimized for the Intel® Xeon™ processor family. They support DP-based platforms by delivering increased system bus, memory, and I/O bandwidth for enhanced performance, scalability, and end-user productivity.

### DP server-supported chipsets:

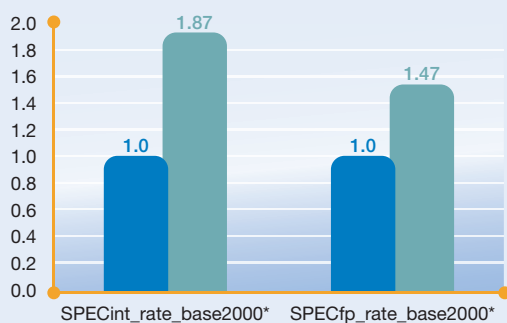
- Intel® E7520 Chipset: For performance and volume server platforms. Full feature support includes three configurable PCI Express\* x8 links.
- Intel® E7320 Chipset: For value platforms. Includes one configurable PCI Express\* x8 link.

### DP workstation-supported chipset:

- Intel® E7525 Chipset: For performance and volume workstation platforms. Full feature support includes one configurable PCI Express\* x8 link and one configurable PCI Express\* x16 link for graphics support.

Intel Xeon processor-based platform configurations provide flexibility for multiple segments and headroom for future growth, allowing tailored solutions for today's enterprise environment while helping to protect your investment in design, integration and support.

## Intel® Xeon™ processor with 800 MHz system bus Uni-Processor to Dual-Processor Scaling<sup>2</sup>



Source: Intel internal measurements (5/28/04).

Figure 2 illustrates how you can take full advantage of your workstation's capability by adding a second processor.

- Intel® Xeon™ processor 3.60 GHz with 800 MHz system bus for DP Workstations in a single-processor configuration
- Intel® Xeon™ processor 3.60 GHz with 800 MHz system bus for DP Workstations in a dual-processor configuration

#### System Configurations

All platforms: Microsoft Windows\* XP Professional SP1.

1P and 2P Intel® Xeon™ Processor on Intel® WS400 pre-release reference board, 4GB DDR2-400 -512MB Samsung M393T6553BG0-CCC, Adaptec AIC7902 Ultra320 SCSI adapter, Intel Chipset Software Utility INF version 5.20.1006, nVidia® Quadro® FX 1300 128MB PCIe video card using driver 60.30.

**NOTE:** SPECint2000 and SPECfp2000 benchmark tests reflect the performance of the microprocessor, memory architecture and compiler of a computer system on compute-intensive, 32-bit applications. SPEC benchmark tests results for Intel microprocessors are determined using particular, well-configured systems. These results may or may not reflect the relative performance of Intel microprocessor in systems with different hardware or software designs or configurations (including compilers). Buyers should consult other sources of information, including system benchmarks; to evaluate the performance of systems they are considering purchasing.

Features	Benefits
Multiple SKUs up to 3.60 GHz	Broad family offering brings performance enhancements across multiple price points
800 MHz system bus	Provides greater platform bandwidth for increased memory (with DDR2-400 memory), PCI Express* I/O and graphics
Intel® Extended Memory 64 Technology2 (Intel® EM64T)	Enhances next generation IA-32 platforms with 64-bit addressability and related instructions, allowing flexibility for 64-bit and 32-bit applications and operating systems
Hyper-Threading Technology	Improves processor utilization and system responsiveness in conjunction with the new Streaming SIMD 3 instructions for better user experience
1MB integrated L2 cache	More data can be stored closer to processor execution units for faster data access, resulting in higher system throughput and shorter system latency
Demand Based Switching with Enhanced Intel SpeedStep® Technology	Reduces average system power consumption and potentially improves system acoustics
Streaming SIMD Extensions 3 (SSE3) Instructions	Better multimedia and encryption/decryption processing, along with support for more computationally intensive graphics

## Intel® Extended Memory 64 Technology (Intel® EM64T)

Intel EM64T is one of a number of innovations being added to Intel's DP Server/Workstation platforms. It represents a natural addition to Intel's IA-32 architecture, allowing platforms to access larger amounts of memory. For example, utilizing Intel EM64T and a 64-bit operating system, a LINPACK 30k solution set can be achieved. Without Intel EM64T, LINPACK is limited to a 15k solution set in a 32-bit operating system environment. Processors with Intel EM64T will support 32-bit or 64-bit applications running on 64-bit extended operating systems from Microsoft, Red Hat and SuSE. Processors running in legacy<sup>3</sup> mode remain fully compatible with today's existing 32-bit applications and operating systems.

Additional information for Intel EM64T can be found at: [developer.intel.com/technology/64bitextensions/](http://developer.intel.com/technology/64bitextensions/)

## Channel Products

Intel also offers boxed Intel Xeon processors, which provide Intel-designed thermal solutions and a three-year limited warranty. For more information, visit the Intel® Reseller center at: [www.intel.com/reseller](http://www.intel.com/reseller), or contact your Intel sales representative or Intel authorized distributor. Contact your Intel® products representative to discover how Intel Xeon processor based servers can enhance your business productivity. Or, visit the Intel® Business Computing site at: [www.intel.com/business](http://www.intel.com/business).

<sup>1</sup> PCI Express reduced power-state "L0s" is not supported.

<sup>2</sup> Performance tests and ratings are measured using specific computer systems and/or components and reflect the approximate performance of Intel products as measured by those tests. Any difference in system hardware or software design or configuration may affect actual performance. Buyers should consult other sources of information to evaluate the performance of systems or components they are considering purchasing. For more information on performance tests and on the performance of Intel products, visit [www.intel.com/performance/resources/benchmark\\_limitations.htm](http://www.intel.com/performance/resources/benchmark_limitations.htm).

<sup>3</sup> Legacy mode supports a 32-bit or 16-bit application running under a 32-bit operating system.

UNITED STATES AND CANADA	EUROPE	ASIA-PACIFIC	JAPAN	SOUTH AMERICA
Intel Corporation Robert Noyce Building 2200 Mission College Blvd. P.O. Box 58119 Santa Clara, CA 95052-8119 USA	Intel Corporation (UK) Ltd. Pipers Way Swindon Wiltshire SN3 1RJ UK	Intel Semiconductor Ltd. 32/F Two Pacific Place 88 Queensway, Central Hong Kong, SAR	Intel Japan (Tsukuba HQ) 5-6 Tokodai Tsukuba-shi 300-2653 Ibaraki-ken Japan	Intel Semicondutores do Brasil LTDA Av. Dr. Chucri Zaidan, 940-10° andar 04583-904 São Paulo, SP Brazil

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Designers must not rely on the absence or characteristics of any features or instructions marked "reserved" or "undefined". Intel reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

Intel® Extended Memory 64 Technology (Intel® EM64T) requires a computer system with a processor, chipset, BIOS, OS, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel EM64T-enabled OS, BIOS, device drivers and applications may not be available. Check with your vendor for more information.

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